

- 12 -

CLAIMS

1) A two-arm belt tensioner (16) for a belt drive
(1) of an internal combustion engine (3); the belt
5 tensioner (16) comprising a tubular supporting portion
(20) fixed to a fixed supporting structure (6); a first
(24) and a second (23) arm fitted to said tubular
supporting portion (20) to rotate about a common hinge
axis (21); a first (25) and a second (26) idle wheel
10 fitted to respective ends (28) of said first (24) and
said second (23) arm and cooperating with respective
branches (12)(13) of a belt (11) of said drive; and
elastic forcing means (33) for forcing said first (24)
and said second (23) arm towards each other to keep
15 said wheels (25)(26) in contact with said respective
branches (12)(13) of the belt (11); characterized in
that said elastic forcing means (33) comprise a
torsionally elastic elongated member (34) extending
through said tubular supporting portion (20), coaxially
20 with the hinge axis (21), and having respective
opposite end portions (37)(38) projecting outwards of
said tubular supporting portion (20); a first (40) and
a second (41) end cap located at opposite axial ends of
said tubular supporting portion (20), and each fitted
25 in angularly fixed manner to a respective said end
portion (37)(38); said second cap (41) being fitted
directly with one end (31) of said second arm (23), and
defining a radial opening (46) fitted through with said

- 13 -

first arm (24); angular connecting means (43; 51) being interposed between said first arm (24) and said first cap (40), and housed inside said tubular supporting portion (20) and said first and said second cap (40) (41).

2) A belt tensioner as claimed in Claim 1, characterized by comprising axial locating and locking means (40, 41, 45) for keeping said elongated torsionally elastic member (34) and said first and said second arm (24) (23) in axially fixed positions with respect to said tubular supporting portion (20); said axial locating and locking means comprising said first (40) and said second (41) cap.

3) A belt tensioner as claimed in Claim 2, characterized in that said axial locating and locking means comprise two shoulders (45) carried by said second cap (41); said second arm (23) resting on said shoulders and being forced onto said second cap (41).

4) A belt tensioner as claimed in one of the foregoing Claims, characterized in that said first (40) and said second (41) cap are force fitted onto the respective end portions (37) (38) of said elongated torsionally elastic member (34).

5) A belt tensioner as claimed in any one of the foregoing Claims, characterized in that said tubular supporting portion (20), said first cap (40), and at least part of said second cap (41) are housed completely or lie within a straight cylindrical surface

- 14 -

(K) parallel to the hinge axis (21); an intermediate portion of said cylindrical surface (K) being defined by an outer lateral surface of said tubular supporting portion (20).

5 6) A belt tensioner as claimed in any one of the foregoing Claims, characterized in that said angular connecting means comprise a torsionally rigid tubular sleeve (43) connected integrally to said first cap (40) and having an end portion (43a) engaging said second
10 cap (41) in rotary manner about said hinge axis (21); said first arm (24) being connected integrally to said end portion (43a) of the tubular sleeve.

7) A belt tensioner as claimed in Claim 6, characterized in that said angular connecting means
15 comprise a further torsionally elastic member (51).

8) A belt tensioner as claimed in Claim 7, characterized in that said further torsionally elastic member (51) extends parallel to said elongated torsionally elastic member (34), and is connected to
20 said first arm (24) and to said first cap (40) in parallel with said elongated torsionally elastic member (34).

9) A belt tensioner as claimed in Claim 8, characterized in that said further torsionally elastic member comprises at least one wire torsion spring (51)
25 surrounding said elongated torsionally elastic member (34).

10) A belt tensioner as claimed in any one of the

- 15 -

foregoing Claims, characterized in that said elongated torsionally elastic member (34) comprises a number of elongated bodies (35) having the same cross section.

11) A belt tensioner as claimed in Claim 10,
5 characterized in that said elongated bodies (35) have a substantially circular cross section.

12) A belt tensioner as claimed in Claim 10,
characterized in that said elongated bodies (35) have a triangular cross section with substantially equal
10 sides.

13) A belt tensioner as claimed in any one of the foregoing Claims, characterized in that said first (24) and said second (23) arm each comprise two contoured portions (27) of the same shape and size.

14) A belt tensioner as claimed in Claim 13,
15 characterized in that said contoured portions (27) of each arm extend on opposite sides of a relative central plane (P) of symmetry of the relative wheel (25)(26), which plane is perpendicular to the axis of rotation of
20 the relative said wheel.

15) A belt tensioner as claimed in Claim 13 or 14, characterized in that said contoured portions (27) are made of pressed sheet metal.

16) A belt tensioner as claimed in Claim 14 or 15,
25 characterized in that said contoured portions contact, and are connected integrally to, each other.

17) A belt tensioner as claimed in one of Claims 13 to 16, characterized in that the contoured portions

- 16 -

of each arm define at least one end fork (28) having
respective arms (28a); each arm of the end fork having
a relative cylindrical projection (28b) forming part of
a hinge pin coaxial with a relative axis (A) and to
5 which the relative wheel (25, 26) is mounted to rotate
about the relative axis (A).